

6.02.20 – APPENDIX: WATER RECOVERY AND REUSE DESIGN AND CONSTRUCTION STANDARD

The following is a description of the various types of water systems and recovery methods at The University of Texas at Austin.

RECOVERED WATER:

The University of Texas main campus maintains a system of pipelines in the utility tunnels that collect clean water from buildings and deliver it to the cooling towers of our power plant and chilling stations. The sources of this water are Fin Water (condensation water that drips off the fins of cooling coils in HVAC systems), ground water (from french drains and basement sumps) and once-through cooling systems of laboratory equipment (where the water originated from the domestic water system and would otherwise be dumped to sanitary sewer).

Most of the tunnel pipelines for Recovered Water are 4-inch and 6-inch. Utilities maintains a pressure of about 60 psi, referenced to the surface elevation of Speedway at 24th St.

Recovered water used to come in two varieties (Domestic Recovered Water and Non-Domestic Recovered Water), but we now mix those sources so there is no longer a distinction. Some tunnels continue to have separate pipelines for the two.

Recovered Water is NOT carried in purple-colored pipe. Recovered Water pipe is usually white or gray PVC, or galvanized with Victaulic couplings. Recovered Water piping is usually located in utility tunnels.

Distinctions between different types of recovered water:

- Fin water: AC condensate. It's not steam condensate, which is why we call it "fin water". It's very clean from a water chemistry standpoint, sometimes is fouled by bacteria or algae growing in the AHUs.
- Ground water: is typically in the range of 300 to 600 micromhos/cm. Can cause scaling of pipes over time so we like nothing smaller than 2" at connections to sources, 4 to 6 inch, even 8 inch pipe in the tunnels.
- Once-through cooling (city water): recovery has same water quality characteristics as regular city water.
- Swimming pool drain water: is the fourth type of recovered water. It is similar to city water in quality, modified by halogenic disinfection by-products, free chlorine, and chloramines.

All these sources are mixed into the same distribution piping in the tunnels.

RECLAIMED WATER:

The campus has several thousand feet of purple pipe installed, ready to carry Reclaimed Water. The City of Austin has not yet extended their Reclaimed Water piping to the campus, so our purple pipe is sitting un-used at the moment, but they do consider it a priority project.

Reclaimed Water is highly processed wastewater from the City wastewater treatment plants. It looks just like potable domestic water, and by some accounts it is "almost" OK to drink. The City will sell Reclaimed Water at a discounted price, and UT intends to use it for cooling tower makeup and irrigation. In at least one new building (ESB) Reclaimed Water is expected to be used for toilet flushing. We have been advised that its higher nitrogen content makes it unsuitable for decorative fountains.

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Reclaimed Water pipe is direct buried, like domestic water piping and unlike Recovered Water piping.

IRRIGATION WATER:

Irrigation Water is 100% identical to City of Austin domestic water. It comes out of the same City of Austin water mains. The only distinction between Irrigation Water and Domestic Water is that Irrigation Water carries no wastewater charge, so it can only be used for irrigation or for cooling tower makeup when the cooling tower blow-down is metered and billed separately.

DOMESTIC WATER:

This is potable water from the City of Austin, used for drinking, hand-washing, bathing, etc. It is our most expensive source of "wetness," so we use the alternatives listed above whenever possible. UT has its own network of buried domestic water mains under much of the campus, supplied from about 20 City water meters which are tapped into City-owned buried domestic water mains.